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ABSTRACT

The Classroom Behavior Rating Scale (CBRS) was developed to provide school psychologists and educators with a measure of learning-related classroom behaviors of elementary school students. The initial item pool consisted of 100 behavioral statements reflecting learning-related behaviors such as attention and persistence. These behaviors were delineated within various educational environments (e.g. large group instruction, seat work, etc.). On the basis of teacher evaluations with respect to each item's clarity, relevance to classroom learning, and ability to be accurately rated, a 72-item scale was developed. After field testing and item analysis, a 40-item scale remained with an internal consistency reliability of .98. The 40-item CBRS was then given to 158 students, with similar reliability estimates. The CBRS also demonstrated substantial validity as shown by correlations with academic achievement tests, intelligence quotient scores, and classroom behavior problems. (Author/RD)

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Development of a Scale to Measure Learning-Related Behaviors

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ABSTRACT

The Classroom Behavior Rating Scale (CBRS) was developed to provide school psychologists and educators with a measure of learning-related classroom behaviors of elementary school students. The initial item pool consisted of 100 behavioral statements reflecting learning-related behaviors (i.e. attention, persistence, etc.) delineated within various educational environments (i.e. large group instruction, seat work, etc.). On the basis of teacher evaluations with respect to each item's clarity, relevance to classroom learning, and ability to be accurately rated, a 72 item scale was developed. After field testing and item analysis, 32 items were removed resulting in a 40 item scale with an internal consistency reliability of .98. The 40 item CBRS was then given to 158 students. Similar reliability estimates were found. The CBRS also demonstrated substantial validity as shown by correlations with academic achievement tests, IQ scores, and other classroom behavior problems.

Development of a Scale to Measure Learning-Related Behaviors

Within the elementary school classroom, students exhibit myriad behaviors, many of which have a direct effect on the learning process. The need to examine student behavior in the classroom has prompted the development of many scales for the measurement of classroom behavior (Spivack and Swift, 1973). The majority of classroom behavior scales, however, focus on the assessment of maladaptive behaviors. While these scales are useful for assessing emotionally disturbed children, they lack precision to differentiate behaviors in the more "normal" students found in the regular school classroom.

The recent passage and implementation of Public Law 94-142 makes it imperative that assessment of relevant student classroom behaviors take place. Within this context, measurement of behavior is important for the accurate assessment of learning problems. A child may be diagnosed as "learning disabled" when in actuality he or she may have a behavior problem. Furthermore, behavior should be examined within the context of the classroom environment. A child may be attentive and work well in small group settings but demonstrate a lack of attention during large group instruction. It is evident, therefore, that the knowledge of a student's classroom behavior is important to the school psychologist, for in order to diagnose and remediate learning problems, such behavior must be taken into consideration.

Although it would be optimal for the school psychologist to directly observe students' classroom behaviors, this is often not feasible, given the many demands on his or her time. The evaluation, therefore, becomes the responsibility of the teachers who have daily contact with the students. Direct observation, whether by coding system or functional analysis of behavior, is a time consuming

task and one which teachers are reluctant to undertake. In order to measure learning-related classroom behaviors while meeting the constraints of format and administration time, Reynolds, DeSetto & Bentley (1977) have developed a scale which measures classroom behaviors relevant to learning. This instrument, the Classroom Behavior Rating Scale (CBRS), has demonstrated high reliability and validity. The purpose of this paper is to describe the development of this scale, the utilization of which should be of value to school psychologists and other providers of pupil personnel services.

Initial Scale Development

Item Development

Scale development was initiated by the generation of 100 behaviorally worded statements describing various classroom behaviors such as attention, persistence and response to directions. Behaviors were selected on the basis of their potential influence on classroom learning. Since a child may exhibit different behaviors as a function of the classroom situation he or she is in, behaviors were delineated within the context of six educational environments: large group instruction, small group instruction, seat work, test situations, projects and homework. Definitions of these environments are provided in Table 1.

Insert Table 1 about here

Content Validation

In order to validate the content of the scale, 18 teachers were asked to critically evaluate each item on the basis of three criteria: clarity of item meaning, item relevance to classroom learning, and confidence in their ability

to accurately rate a child on the stated behavior. Teachers rated each criterion variable on a three-point Likert-type scale. Samples of items and the evaluation scale are provided in Table 2. Strict criteria were utilized for item inclusion. A moderate or poor evaluation on any of the three above-mentioned criteria resulted in the deletion of an item from the scale. On several items which were positively evaluated for relevance to learning and ability to rate but moderate with regard to item meaning, minor changes were made in wording to increase item clarity.

Insert Table 2 about here

This process resulted in the reduction of the scale to 72 items. Thus, the initial version of the Classroom Behavior Rating Scale (CBRS) consisted of 72 behavior statements. Given the wording of the statements, a six point response format using a "Never" to "Consistently" continuum for rating the behaviors was chosen as the most appropriate format. Thirty-two items were keyed in a positive direction and 40 items were keyed in a negative direction. Definitions of the six educational environments were included in the directions to insure uniformity of item interpretation. Sample items from the CBRS are shown in Table 3.

Insert Table 3 about here

Field Testing

The 72 item version of the CBRS was field tested in Spring, 1977. Twenty-eight regular class teachers from elementary schools in upstate New York, who had not taken part in the initial item evaluations, participated. The teachers represented grades one through six. Each teacher was asked to randomly select

and rate three to five students with the CBRS. Demographic information and evaluations of students' academic achievement were also obtained. A total of 82 completed CBRS booklets were returned for data analysis. Teachers reported that ratings required approximately 10 to 15 minutes per student. Teachers were also asked to score each booklet. Since the scale includes reverse scored items it is important that directions are clear to insure accurate scoring by teachers. Teachers made 12 errors in scoring a total of 5,804 items. This is equivalent to a scoring accuracy rate of 99.8 percent.

Data Analysis I - Preliminary

Reliability

The preliminary development of scale content followed a general domain sampling model (Nunnally, 1967). Consequently, the aim of the initial field testing was to obtain a set of items demonstrating high internal consistency. On the basis of item to total correlations, corrected via Cureton's (1966) technique, 32 items were eliminated, resulting in a 40 item scale. Since a Likert-type scale format was used, internal consistency reliability was estimated using Cronbach's (1951) Coefficient Alpha. The reliability of the 40 item scale was .98.

Validity

As mentioned previously, validity of scale content was established via teacher evaluation of item content. In order to obtain an estimate of concurrent validity, teachers were requested to provide a rating of each student's academic achievement. Since the CBRS is considered a measure of learning-related behaviors, a logical criterion variable would be academic achievement. A product-moment correlation coefficient of .78 ($p < .001$) was obtained between the 40 item CBRS and students' level of academic achievement as rated by teachers.

It is recognized that teacher ratings of students' academic achievement may be a somewhat biased measure. However, given the magnitude of the correlation, it is felt that a significant relationship exists between behaviors measured by the CBRS and classroom learning.

Data Analysis II - Current

Once the final item version of the CBRS was completed, further data to assess the reliability and validity of the CBRS was collected. Thirty-two regular classroom teachers provided ratings on 158 students from grades one through six. In addition to CBRS ratings, teachers were asked to provide demographic information (e.g. age, sex, etc.), academic achievement and intelligence test data, rate the child as to level of socio-economic status and indicate the degree to which certain behavior problems may be manifested. These behavior problems and the degree to which they were indicated to occur are shown in Table 4.

Insert Table 4 about here

The sample consisted of 67 male and 89 female students. Racially the sample was 97 percent white. Teachers were asked to rate students' socio-economic status on the basis of their estimate of family income, from 1 (low) to 5 (high). The mean SES of the sample was 2.98 with a standard deviation of .74. Although normal with regard to skewness, the distribution of SES was leptokurtic. The mean IQ of the 49 students for whom IQ data was available was 111.98 with a standard deviation of 13.53 points. The range was 85 to 144.

Reliability

Coefficient Alpha reliability of the CBRS was .99 with a standard error of measurement of 3.98 points. The mean item to total scale correlation corrected via Cureton's (1966) technique was .87. Item to total correlations ranged from

.75 to .93.

Validity

Since the CBRS was developed as a measure of learning-related behaviors, concurrent validity was examined using measures of intelligence, academic achievement and teacher ratings. Academic achievement was measured by the Metropolitan Achievement Test (MAT). Correlations between the CBRS and MAT reading and math scores are shown in Table 5. MAT scores were not available for grades 4 and 6. As can be seen, significant r's were obtained in all instances.

Insert Table 5 about here

Intercorrelations between CBRS, IQ, SES, teacher ratings of academic achievement (1 low, to 5 high), and problem behaviors are shown in Table 6. The CBRS correlated .70 (r^2 = .49) with intelligence test scores, which is congruent with the correlations obtained between achievement test scores and the CBRS. The r = .79 (r^2 =.62) between CBRS and teachers' ratings of achievement is similar to that obtained in the initial scale development study. It can be seen that SES was also related to CBRS scores (r = .48, r^2 = .23).

Insert Table 6 about here

With regard to teachers' ratings of problem behaviors, a high degree of discriminant validity is indicated by the correlations in Table 6. Specifically, the lack of relationship between CBRS scores and hyperactive, withdrawn, acting out, and unstable behaviors is congruent with the fact that the CBRS was designed to measure learning-related behaviors, rather than psychopathological behaviors. The moderately high correlation between the CBRS and inattentive behavior is also expected since inattentiveness may be regarded as a common learning-related behavior within the classroom.

Although an optimal subject to variable ratio was not obtained, a preliminary factor analysis (principal component) produced a strong single factor which accounted for 74.9 percent of the variance. Factor loadings ranged from .72 to .94.

In addition to correlational analyses, a contrast groups approach was also used to assess validity. It was postulated that on the basis of maturity and effects of the school process on behavior, there should be a positive incremental trend in CBRS scores by grade level. This was confirmed as is shown in Figure 1. An analysis of variance indicated a significant grade effect (F (5,126) = 3.10, $p < .01$).

Insert Figure 1 about here

Conclusions

The purpose of this paper was to document and explain the development of the Classroom Behavior Rating Scale. Data collected thus far indicate the CBRS to be a highly reliable and valid measure of learning-related classroom behaviors. Validity evidence in the form of content, concurrent, convergent and discriminant validity, in addition to contrast groups, supports the CBRS's measurement claim. The results delineated here are similar to findings of studies which have compared academic achievement to discrete observable behaviors such as task-orientation and attending (Cobb, 1972; McKinney, Mason, Perkerson, & Clifford, 1975).

The examination of learning-related behaviors should be of value to the school psychologist who needs to know a child's classroom behavior to augment both standardized and informal test information. While the use of observational coding systems for measuring students' classroom behavior has greatly increased our understanding of students' behaviors, they lack a functional utility for the field-based school psychologist. The Classroom Behavior Rating Scale provides a quick, reliable and valid measure of children's behaviors which are relevant to classroom learning.

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Table 1

Definitions of Educational Environments

LARGE GROUP INSTRUCTION - Situations in which all or most of the class are to attend to instructional presentations. For example: A teacher demonstrates long division at the blackboard.

SMALL GROUP INSTRUCTION - Instructional situations in which a teacher or aide works with less than half the class. For example: A teacher leads a reading group.

SEAT WORK - Teacher-monitored situations in which the children carry out assignments independently and at their seats. For example: Class time is devoted to reading workbook exercises.

TEST SITUATIONS - Situations in which the child is required to demonstrate his or her knowledge. For example: The class is given a spelling test.

PROJECTS - Relatively self-directed situations, where it is necessary for the child, individually or in a group, to produce a material product. Example: A group of students working on a science experiment, or individual picture painting.

HOMEWORK - Specific assignments given the student which are to be completed at home. Example: Write short essay "How I Spent My Christmas Vacation."

Table 2

Sample Items on the Teacher Evaluation Scale

2. During large group instruction, the child responds appropriately to teacher's directions.

   a. Item meaning is: very clear _____ moderately clear _____ not clear _____

   b. Item relevance to classroom learning is: high _____ medium _____ low _____

   c. Confidence in accurately rating a child on this item is: high _____ medium _____ low

15. When the child is working on projects, it is necessary to redirect his/her attention.

   a. Item meaning is: very clear _____ moderately clear _____ not clear _____

   b. Item relevance to classroom learning is: high _____ medium _____ low _____

   c. Confidence in accurately rating a child on this item is: high _____ medium _____ low

Table 3

Sample Classroom Behavior Rating Scale Items

PLEASE RATE THE BEHAVIOR OF THE CHILD ON EACH ITEM USING THE RATING SCALE BELOW. CIRCLE THE LETTER WHICH CORRESPONDS TO THE CATEGORY OF YOUR RATING.

Never Rarely Occasionally Moderately often Frequently Consistently

*1.	During large group instruction, the child responds appropriately to teacher's directions.	N	R	O	M	F	C
*2.	The child persists at difficult projects.	N	R	O	M	F	C
*3.	The child begins tests with a "can-do," rather than a "cannot-do" attitude.	N	R	O	M	F	C
*16.	The child works on projects until they are completed.	N	R	O	M	F	C
17.	When doing seat work, it is necessary to redirect the child's attention to the task.	N	R	O	M	F	C
18.	When doing seat work, the child makes careless errors due to inattentiveness.	N	R	O	M	F	C
21.	During large group instruction, the child's attention wanders.	N	R	O	M	F	C

Note. Starred (*) items are reverse scored.

Table 4

Incidence of Other Behavior Problems Manifested by Subjects

Classroom Behavior Problems	These problems occur in the classroom: 15-25% of time	25-50%	more than 50%
Hyperactive (overly energetic, talks out, out of seat)	(17.1)	(8.2)	(6.3)
Withdrawn (very quiet, incommunicative)	(13.9)	(8.2)	(3.8)
Acting Out (aggressive, hostile, rebellious, destructive)	(17.7)	(3.8)	(.6)
Instability (unpredictable, cries easily, explosive)	(18.4)	(3.2)	(0)
Inattentive (short attention span, fails to complete task)	(18.4)	(10.1)	(6.3)

Note. Values in parentheses are proportions.

Table 5

Relationship between CBRS and MAT[a]

Reading and Math Achievement Scores

Grade	Reading	Math
1	.65**	-
2	.76**	.87**
3	.79**	.68**
5	.80**	.86**

Note. [a]Metropolitan Achievement Test

**$p < .001$

Table 6

Intercorrelations Among Variables

	1	2	3	4	5	6	7	8	9
1. CBRS		.70**	.48**	.79**	-.15	-.04	-.04	-.03	-.55**
2. IQ			.38*	.68**	.15	-.05	.14	.17	-.24
3. SES				.51**	.14	-.04	.08	.12	-.20
4. TEACHER RATING					.03	-.04	.23	.05	-.40**
5. HYPERACTIVE						-.07	.64**	.39**	.28*
6. WITHDRAWN							.20	.34**	.21
7. ACTING OUT								.40**	.39**
8. INSTABLE									.26*
9. INATTENTIVE									

*$p < .01$

**$p < .001$

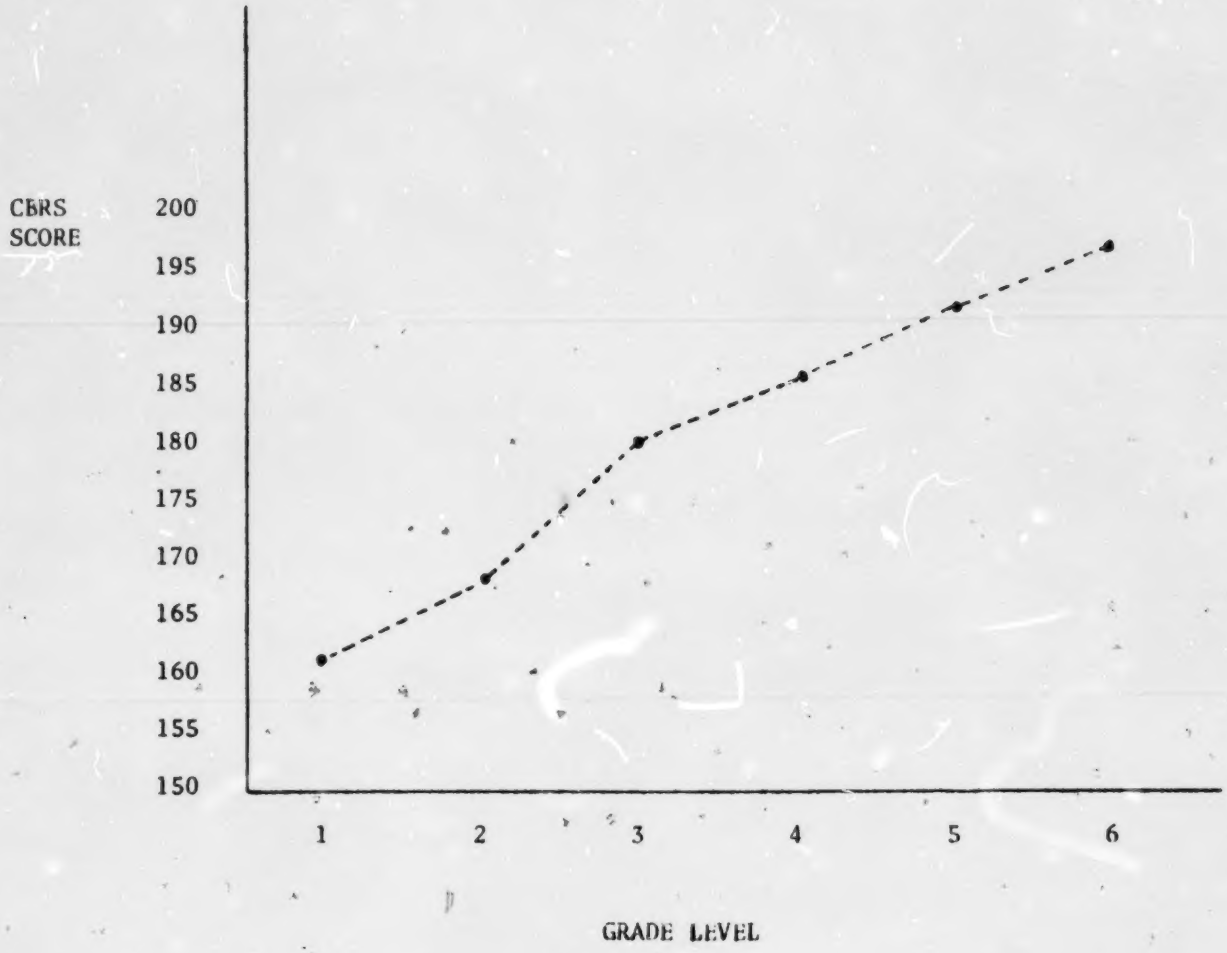

Figure 1. Mean CBRS Scores by Grade Level